

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 7547

Joint Petition of Central Vermont Public Service)
Corporation ("CVPS"), Vermont Electric Power)
Company, Inc., and Vermont Transco, LLC)
("VELCO"), for a certificate of public good,)
pursuant to 30 V.S.A. § 248(j), authorizing the)
installation and operation of a new 5.0 MVAR)
capacitor bank and associated circuit breaker at)
VELCO's Cold River Substation located at 777)
Cold River Road in North Clarendon, Vermont)

Order entered: 10/19/2009

I. INTRODUCTION

This case involves a joint petition filed by Vermont Electric Power Company, Inc., and Vermont Transco, LLC (together "VELCO") and Central Vermont Public Service Corporation ("CVPS") requesting a certificate of public good under 30 V.S.A. § 248(j) authorizing the installation and operation of a new 5.0 MVAR capacitor bank, circuit breaker, and associated equipment at VELCO's Cold River Substation located in North Clarendon, Vermont. In today's Order, we conclude that the proposed project will be of limited size and scope; the petition does not raise a significant issue with respect to the substantive criteria of 30 V.S.A. § 248; the public interest is satisfied by the procedures authorized by 30 V.S.A. § 248(j); and the proposed project will promote the general good of the state.

II. PROCEDURAL HISTORY

On June 4, 2009, CVPS and VELCO filed a joint petition with the Public Service Board ("Board") requesting a certificate of public good under 30 V.S.A. § 248(j) authorizing the installation and operation of a new 5.0 MVAR capacitor bank and associated circuit breaker at VELCO's Cold River Substation located at 777 Cold River Road in North Clarendon, Vermont. CVPS and VELCO submitted prefiled testimony, proposed findings, and a proposed order pursuant to the requirements of 30 V.S.A. § 248(j).

Notice of the petition was sent on August 21, 2009, to all entities specified in 30 V.S.A. § 248(a)(4)(c) and other interested parties. The notice stated that any party wishing to submit comments as to whether the petition raises a significant issue with respect to the substantive criteria of 30 V.S.A. § 248 needed to file comments with the Board on or before September 21, 2009. A similar notice of the filing was published in the *Rutland Herald* on August 24, 2009, and August 31, 2009.

In a July 14, 2009, memorandum, the Board requested additional information. On July 15, 2009, CVPS filed a letter in response to that request.¹ In that filing, CVPS included clarifications to the prefiled testimony of John Fiske and Kim Jones.

On September 21, 2009, the Vermont Department of Public Service ("Department") filed a letter stating that the petition does not raise a significant issue with respect to the criteria of Section 248 and a certificate of public good should be issued. The Agency of Natural Resources ("ANR") did not submit comments on the petition.

III. FINDINGS

1. The petitioners, CVPS and VELCO, are organized public service corporations with principal places of business at 77 Grove Street, and 366 Pinnacle Ridge Road, respectively, in Rutland, Vermont. The petitioners are corporations as defined by 30 V.S.A. § 201, and are subject to the Board's jurisdiction. Petition at 1.

2. The proposed project will involve the installation of a 46 kV, 5.0 MVAR capacitor bank, circuit breaker, and associated equipment in an existing 46 kV line position at the VELCO Cold River substation, which is located at 777 Cold River Road in Clarendon, Vermont. Fiske pf. at 2; exh. JRF-1 and JRF-3.

3. The VELCO Cold River Substation is supplied from two 115 kV transmission lines. The substation consists of two 115 KV circuit breakers arranged in a single bus configuration, one 115/46 kV autotransformer, associated transformer high-side circuit switcher and low-side

1. July 15, 2009, letter from Jeanne E. Burns, Esq., on behalf of CVPS to Susan M. Hudson, Clerk of the Board ("CVPS letter").

bank breaker, and a 46 kV single bus design. Currently, there are four 46 KV circuit breakers at the substation, identified as H31, H32, H33, and H89. Fiske pf. at 2.

4. The H31 circuit breaker serves two substations and 6038 customers, and protects approximately 7.4 miles of 46 kV line. The H32 46 kV circuit breaker serves one substation and one customer and protects approximately 7.4 miles of 46 kV line. The H33 circuit breaker serves five substations and 4880 customers and protects approximately 25 miles of 46 kV line. The H89 circuit breaker acts as the transformer low-side bank breaker. Fiske pf. at 2; CVPS Letter at 4.

5. The proposed installation consists of one 46 kV circuit breaker, three 46 kV single-blade breaker disconnects, three current-limiting reactors, one 5.0 MVAR capacitor bank and associated protective relaying. The proposed 46 kV circuit breaker's insulating medium is sulfur hexafluoride ("SF6") gas. Fiske pf. at 3; exh. JRF-2 and JRF-3; CVPS Letter at 4.

6. The Rutland area is vulnerable to voltage inadequacies during contingencies on the 46 kV systems or loss of the VELCO 115 kV sources at North Rutland, Cold River or Ascutney. These weaknesses can threaten the area's reliability in emergency situations and can also manifest themselves during scheduled and unscheduled outages for substation or transmission facilities. In the past, scheduled outages have required the installation of VELCO's portable 5.4 MVAR capacitor bank to allow for required maintenance. Jones pf. at 3.

7. The proposed capacitor bank is sized to support 10.0 MVAR of capacitors, but CVPS will install only half of the capacity. The initial capacity is sized to meet existing load, with the ability to install additional capacitors as needed with future area load growth. Fiske pf. at 3.

8. The proposed project is designed to improve system reliability, increase energy efficiency, and ensure compliance with ISO New England operating practices. Jones pf. at 3-5.

9. The total construction cost for the proposed project is estimated to be \$311,792. CVPS will be responsible for all capital costs and any ongoing maintenance costs. Jones pf. at 4; CVPS Letter at 4.

Orderly Development of the Region

[30 V.S.A. § 248(b)(1)]

10. The proposed project will not unduly interfere with the orderly development of the region, with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality. This finding is supported by findings 11 through 13, below.

11. The proposed capacitor bank and associated circuit breaker will provide more reliable and efficient electric service to the surrounding area. All proposed construction will take place in the confines of an existing substation and will not materially change the appearance of the facility. Upton pf. at 2-3.

12. Neither the Clarendon Town Plan nor the Rutland Regional Plan directly addresses construction of substations or electrical facilities, and neither contains land conservation measures. Upton pf. at 3.

13. CVPS presented a project description and photographs of the existing facility to the Clarendon Selectboard and Planning Commission, and the Rutland Regional Planning Commission, at a public meeting held on January 21, 2009. Additional information, including site plans and elevation drawings, was sent to each entity on February 17, 2009. Neither entity recommended changes to the proposed design. Upton pf. at 3.

Need for Present and Future Demand for Service

[30 V.S.A. § 248(b)(2)]

14. The proposed project is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost-effective manner through energy conservation programs and measures and energy efficiency and load management measures. This finding is supported by findings 15 through 18, below.

15. The proposed 5.0 MVAR capacitor bank will increase the system's ability to serve existing customers during contingencies. Jones pf. at 3.

16. The proposed project is the most cost-effective tool to meet present and future demand for service. The proposed upgrades are for reliability and power-factor correction and not growth. The implementation of non-transmission alternatives would not be cost-effective in deferring the proposed project. Jones pf. at 5.

17. The proposed capacitor bank is the most cost-effective means to address power-factor deficiencies. Power-factor correction can be addressed with dynamic Volt-Ampere Reactive ("VAR") devices, but such devices were determined to be too costly for the proposed project. To avoid the need for a second capacitor bank, CVPS is studying the placement of distribution capacitors on individual 12.47 kV feeders in the Rutland area and pursuing a rate design imposing a charge on certain rate classes if the average power factor during a billing period is below 90 percent. CVPS Letter at 3.

18. Based on project cost and configuration, the proposed upgrade does not meet the accepted threshold for Distributed Utility Planning analysis, and thus such analysis is not required. Jones pf. at 5.

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

19. The proposed project will not adversely affect system stability and reliability. This finding is supported by findings 20 through 24, below.

20. The proposed project will increase system stability and reliability. It will improve the system's ability to serve existing customers during contingencies. Jones pf. at 3.

21. The proposed capacitor bank will increase energy efficiency by having VAR support directly attached to the 46 kV bus, resulting in lower reactive demands and higher local power factors. VELCO is pursuing this VAR Correction Policy in response to the ISO New England Operating Procedure 17 - Load Power Factor Correction. Jones pf. at 3.

22. Power factor is the measure of how efficiently electrical power is consumed, with the ideal situation being unity, 100 percent. In the Rutland area, the power factor on average is below 97 percent. The addition of the capacitor bank will reduce the component of the current associated with reactive power and thereby reduce the losses in the supply. The proposed

capacitor installation will improve the average power factor, which will minimize wasted energy and improve the efficiency of the system. CVPS Letter at 1.

23. The ISO New England Operating Procedure No. 17 establishes ranges of acceptable load power factors for various areas within the New England control area to provide for reliable system reactive performance. Operating Procedure No. 17 establishes minimum and maximum load power factor limits for each area at three discrete load levels: heavy (100 percent of the load forecast for the study year); medium (75 percent of the load forecast); and light load (35 percent of the load forecast).² CVPS Letter at 1.

24. The proposed capacitor bank can be used during peak situations to provide more efficient and cost-effective energy delivery. Jones pf. at 4.

Economic Benefit to the State

[30 V.S.A. § 248(b)(4)]

25. The proposed project will have an economic benefit to the State. This finding is supported by findings 26 through 28, below.

26. The proposed project will provide improved system performance, preventing the loss of load, and providing customers with reliable service. Jones pf. at 4.

27. The proposed capacitor installation is part of a larger effort to address in-state power-factor needs that would help defer larger, more costly transmission upgrades. The need to increase transmission equipment size could be deferred through a power-factor correction by reducing current flow to conductors or transformers in the system. Jones pf. at 4; CVPS Letter at 3.

28. The proposed project would avoid the negative economic impact to VELCO of possible monetary fines associated with the failure to meet the requirements of ISO Operation Practice 17. Jones pf. at 4.

2. The load power factor correction standards for the 2008-study year for the Vermont area range for a light load of 86 to 99 percent and for a heavy load of 96 to 100 percent. ISO NE Operating Procedure No. 17 - Load Power Factor Correction, Appendix B.

Aesthetics, Historic Sites, Air and Water Purity,
the Natural Environment and Public Health and Safety

[30 V.S.A. § 248(b)(5)]

29. The project, as proposed, will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment and public health and safety. This finding is supported by findings 30 through 52, below, which are the criteria specified in 10 V.S.A. §§ 1424(a)(d) and 6086(a)(1)-(8)(a) and (9)(k).

Public Health and Safety

[30 V.S.A. § 248(b)(5)]

30. The proposed project will not have an undue adverse effect on public health and safety. The proposed project is an upgrade of existing facilities, and will be designed in accordance with the National Electric Safety Code requirements. VELCO will use quality materials and adhere to careful construction practices throughout the construction phase. Fiske pf. at 4.

Outstanding Resource Waters

[10 V.S.A. § 1424(a)(d)]

31. The proposed project will not be located on or near any surface water features. Upton pf. at 8; exh. TOU-2.

Air Pollution

[10 V.S.A. § 6086(a)(1)]

32. The proposed project will not result in undue air pollution. Construction for the proposed project in the existing substation yard will take place during daylight hours to minimize the effects of noise at neighboring properties. Upton pf. at 4.

33. The SF6 insulating medium for the proposed circuit breaker was chosen because there is no identified commercially available 46 kV vacuum breaker rated for the capacitor switching bank. CVPS Letter at 4.

Discussion

The SF6 insulating medium in the circuit breaker for the proposed project is a greenhouse gas, but should have minimal air-quality impacts, provided that the breaker is well maintained in keeping with the manufacturer's specifications. CVPS is a member of the SF6 Emission Reduction Partnership for Electric Power Systems, a collaborative effort between the Environmental Protection Agency ("EPA") and the electric power industry to reduce SF6 emissions. The EPA program provides a framework for reporting and monitoring on SF6 use. CVPS's participation in the program provides some assurance that SF6 emissions from the proposed project's operations are being minimized.

Water Pollution

[10 V.S.A. § 6086(a)(1)]

34. The proposed project will not result in undue water pollution. Construction for the proposed project will take place in an existing substation yard, with no expansion required. Upton pf. at 4. This finding is further supported by the specific findings under the criteria of 10 V.S.A. §§ 6086(a)(1)(A) through (G), below.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

35. The proposed project is not located in a headwaters area. Upton pf. at 4; exh. TOU-2.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

36. The proposed project will meet applicable health and environmental conservation regulations regarding the disposal of wastes. The proposed project does not involve the disposal of waste or injection of any material into ground water or wells. No equipment will be retired for the proposed project. Upton pf. at 4.

Water Conservation

[10 V.S.A. § 6086(a)(1)(C)]

37. The proposed project will not require the use of water. Upton pf. at 4-5.

Floodways

[10 V.S.A. §§ 6086(a)(1)(D)]

38. The proposed project is not located within a floodway. Upton pf. at 5.

Streams

[10 V.S.A. §§ 6086(a)(1)(E)]

39. The proposed project will have no impact on streams. There are no streams at the proposed project site. Upton pf. at 5; exh. TOU-2.

Shorelines

[10 V.S.A. §§ 6086(a)(1)(F)]

40. The proposed project is not located near a shoreline. Upton pf. at 5; exh. TOU-2.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

41. The proposed project will not impact wetlands. There are no wetlands within 2500 feet of the project area. Upton pf. at 5; exh. TOU-2.

Sufficiency of Water and Burden on Existing Water Supply

[10 V.S.A. §§ 6086(a)(2)&(3)]

42. The proposed project will not require a water supply and therefore will not place a burden on the existing water supply. Upton pf. at 5.

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

43. The proposed project will not cause an adverse impact on soil erosion. All work for the proposed project will take place within the existing substation yard. There are no rivers or streams on the proposed project site. Upton pf. at 6; exh. TOU-1.

Transportation Systems

[10 V.S.A. § 6086(a)(5)]

44. The proposed project will not cause unreasonable congestion or unsafe conditions with respect to transportation systems. Upton pf. at 6.

Educational Services

[10 V.S.A. §§ 6086(a)(6)]

45. The proposed project will not cause an unreasonable burden on educational services. Upton pf. at 6.

Municipal Services

[10 V.S.A. §§ 6086(a)(7)]

46. The proposed project will not cause an unreasonable burden on municipal services. Upton pf. at 6.

**Aesthetics, Historic Sites
and Rare and Irreplaceable Natural Areas**

[10 V.S.A. § 6086(a)(8)]

47. The proposed project will not have an undue adverse impact on the scenic or natural beauty, aesthetics, historic sites, or rare and irreplaceable natural areas. This finding is supported by findings 48 through 50, below.

48. The proposed project will not have any undue adverse impact on aesthetics or natural beauty. The installation of the capacitor bank and associated circuit breaker equipment will take

place in an existing transmission substation. Upton pf. at 7; Fiske pf. at 2; exhs. TOU-1 and TOU-3.

49. The proposed capacitor bank will be installed in the southwest corner of the existing substation, almost entirely out of view from Cold River Road, and will not involve any expansion of the yard or removal of vegetation. The overall appearance of the facility will essentially be unchanged, and the appearance of the new equipment will fit within the context of its surroundings. Upton pf. at 7; exhs. TOU-1 and TOU-3.

50. The proposed project will not impact potential archeological sites, rare or irreplaceable natural areas, or historic sites because it is located within the confines of an existing substation yard. Upton pf. at 7.

Necessary Wildlife Habitat and Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

51. The proposed project will not have any adverse impacts on wildlife habitats or threatened or endangered species. Upton pf. at 8; exh. TOU-1.

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

52. The proposed project will not unnecessarily or unreasonably endanger the public or quasi-public investments in any governmental or public utility facilities, services, or lands, or materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to, such facilities, services, or lands. The closest public investments, Cold River Road and East Road, will not be impacted by the proposed project. Upton pf. at 8.

Least-Cost Integrated Resource Plan

[30 V.S.A. § 248(b)(6)]

53. The proposed project is consistent with the principles for resource selection expressed in CVPS's approved least-cost integrated resource plan pursuant to 30 V.S.A. § 218c. The proposed

project will improve the reliability for the Rutland area and result in efficiencies associated with energy delivery. Jones pf. at 5-6.

Compliance with Electric Energy Plan

[30 V.S.A. § 248(b)(7)]

54. The proposed project is consistent with the *Vermont Electric Plan*. The Plan's objectives call for the provision of electrical service that is "carefully balanced" between the following policy goals: "efficient, adequate, reliable, secure, sustainable, affordable, safe, and environmentally sound, while encouraging the state's economic vitality and maintaining consistency with other state policies." The proposed project represents the proper balance among all these objectives. Jones pf. at 6.

55. The Department filed a determination on September 21, 2009, that the proposed project is consistent with the *Vermont Electric Plan*, in accordance with 30 V.S.A. § 202(f).

Outstanding Resource Waters

[30 V.S.A. § 248(b)(8)]

56. The proposed project will not be located on or near any surface waters. Upton pf. at 8; exh. TOU-2.

Existing or Planned Transmission Facilities

[30 V.S.A. § 248(b)(10)]

57. The proposed project can be served economically by existing or planned transmission facilities without undue adverse impact on Vermont utilities or customers. The proposed project will improve voltage performance during contingency situations and provide more efficient and cost-effective energy delivery. The proposed upgrade may defer more expensive transmission reinforcements and thereby reduce costs for Vermont customers. Jones pf. at 7.

IV. CONCLUSION

Based upon all of the above evidence, we conclude that the proposed project will be of limited size and scope; the petition does not raise a significant issue with respect to the substantive criteria of 30 V.S.A. § 248; the public interest is satisfied by the procedures authorized by 30 V.S.A. § 248(j); and the proposed project will promote the general good of the state.

V. ORDER

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board of the State of Vermont that:

1. The proposed installation and operation by Vermont Electric Power Company, Inc. and Vermont Transco, LLC and Central Vermont Public Service Corporation of a new 5.0 MVAR capacitor bank, circuit breaker, and associated equipment at Vermont Electric Power Company, Inc.'s Cold River Substation located at 777 Cold River Road in North Clarendon, Vermont, will promote the general good of the State of Vermont in accordance with 30 V.S.A. Section 248, and a certificate of public good to that effect shall be issued.
2. Construction shall be in be in accordance with the plans as submitted in these proceedings. Any material deviation from these plans must be approved by the Board.
3. The proposed project shall be designed and constructed in accordance with the National Electric Safety Code requirements.

Dated at Montpelier, Vermont this 19th day of October, 2009.

<u>s/James Volz</u>)	
)	PUBLIC SERVICE
)	
<u>s/David C. Coen</u>)	BOARD
)	
)	OF VERMONT
<u>s/John D. Burke</u>)	

OFFICE OF THE CLERK

FILED: October 19, 2009

ATTEST: s/Judith C. Whitney
Deputy Clerk of the Board

Notice to Readers: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: psb.clerk@state.vt.us)

Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further Order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and order.